

GLASS PANEL RAILINGS

IR 24-1

References:

2001 California Building Code (CBC), Sections 2406.6, Table 16A-B
2007 CBC Sections 2407, 2403.2, 1607A.7 and 2406.1.1

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Discipline: Structural

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This Interpretation of Regulations (IR) is intended for use by the Division of the State Architect (DSA) staff, and as a resource for design professionals, to promote more uniform statewide criteria for plan review and construction inspection of projects within the jurisdiction of DSA, which include State of California public elementary and secondary schools (grades K-12), community colleges, and state-owned or state-leased essential services buildings. This IR indicates an acceptable method for achieving compliance with applicable codes and regulations, although other methods proposed by design professionals may be considered by DSA.

This IR is reviewed on a regular basis and is subject to revision at any time. Please check the DSA web site for currently effective IR's. Only IR's listed in the document at <http://www.dsa.dgs.ca.gov/Pubs/default.htm> (click on "DSA Interpretation of Regulations Manual") at the time of plan submittal to DSA are considered applicable.

Purpose: This Interpretation of Regulations (IR) clarifies DSA requirements for glass panel railings to be accepted for use in the construction of projects under Division of the State Architect (DSA) jurisdiction. DSA will require the use of either a design or a test option, as explained in this IR.

1. General: Glass panel railing refers to a railing assembly, consisting of glass panels cantilevered from a base and capped with a continuous rail at the top. The system shall be designed so that the top rail remains in place in the event of failure of an individual glass panel. Glazing in railing panels shall be an approved safety glazing material that conforms to 2007 California Building Code (CBC) Section 2406.1.1 (Section 2407.1 in the 2001 CBC). Minimum nominal thickness shall be 1/2". Fully tempered glass and laminated glass shall comply with Category II of Consumer Product Safety Commission (CPSC) standard 16 CFR Part 1201.

Glass panel railings shall **not** be used in locations where they may be subject to vehicle impact (in accordance with 2007 CBC Section 2407.1.3).

2. Design Option: The components and assembly of the glass panel railings are to be designed for a factor of safety of four (4) times the design load.

2.1 Projects submitted to DSA under the 2001 CBC: The required vertical design load for glass panel railings is 100 lbs. per lineal foot. Horizontal load is as tabulated in Table 16A-B of the 2001 CBC and are applied horizontally at right angles to the top rail.

2.2 Projects submitted to DSA under the 2007 CBC: The required vertical and horizontal design loads for glass panel railings are prescribed in 2007 CBC, Section 1607A.7.1 for uniform load and Section 1607A.7.1.1 for concentrated load.

3. Test Option: In lieu of the Design Option in Section 2 above, glass panel railings may be accepted by test. Tests may be conducted in the field or in the laboratory on exact duplicate mock ups as evidence of acceptability of each railing configuration or design.

All tests are to be performed by a DSA approved testing laboratory. Tests are to be observed and results recorded in a report signed by a California registered civil or structural engineer (per 2007 CBC, Section 2403.2).

- 3.1 Test Protocol:** An acceptable test for the entire completed glass railing assembly shall meet the following minimum criteria:
- 3.1.1** Test for two (2) times the horizontal design load(s) in Section 2 above, applied at right angles to the top rail.
 - 3.1.2** Test the deflection of the top rail at one (1) times horizontal design load applied at right angles to the top rail for maximum allowable of $h/120$, where h is the distance from the floor level to the top of the rail.
 - 3.1.3** Top rail shall recover to the original position upon release of the test loadings.
 - 3.1.4** At least one test shall be performed for each railing configuration or design.
 - 3.1.5** Testing procedures for glass panel railings are to be indicated in specifications and on drawings and noted on the Test and Inspection list.